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REBENCHMARKING LABOUR FORCE ESTIMATES TO THE 2011 CENSUS OF POPULATION AND HOUSING

INTRODUCTION

There are two key inputs used in compiling labour force estimates:

- the measure of the population potentially available to the labour force (i.e. the civilian population aged 15 years and over), referred to as population benchmarks; and
- the labour force status of people in the population (i.e. being employed, unemployed or not in the labour force) based on data collected in the monthly Labour Force Survey (LFS).

This article describes the revisions made to labour force estimates as a result of the population benchmarks being rebenchmarked (updated) to include information from the 2011 Census of Population and Housing (Census).

This article:

- provides background to the rebenchmarking of the labour force estimates for the period July 1991 to December 2013;
- describes other improvements made to the labour force series;
- summarises the impact on key labour force series;
- details the process for maintaining the population benchmarks, and
- advises when the annual seasonal reanalysis will be conducted.

Attachment 1 provides an overview of the method for calculating the revised population benchmarks.

The rebenchmarking and other improvements to labour force series described in this article will provide clients with labour force series that:

- use the latest population benchmarks;
- use the latest geography standard which provides statistical regions that are more stable over time, consistent in size, more detailed, and are better representative of underlying settlement patterns and socio-economic relationships;
- standardises the geography and occupation classifications applied across the time series; and
- are more readily comparable to other ABS statistical series.

BACKGROUND TO REBENCHMARKING

Data from the LFS on persons employed, unemployed and not in the labour force are calculated so as to add to independent population benchmarks for age groups, sex and regions. These population benchmarks are based on the Estimated Resident Population (ERP) which reflects Census data adjusted for under-enumeration, and updated for births, deaths, interstate migration and net overseas migration. As labour force estimates cover the civilian population aged 15 years and over, the civilian population aged under 15 years and permanent defence personnel are deducted from ERP to create the labour force population benchmarks.

The labour force population benchmarks for the most recent nine months are initially derived as short-term projections of the most recent preliminary ERP. The labour force population benchmarks and estimates are revised when the preliminary ERP becomes available to replace the short-term projections, and again when these preliminary estimates are subsequently revised. In addition, after each Census, ERP estimates and labour force population benchmarks since the previous Census are revised and the labour force estimates are rebenchmarked to the revised population. This article focusses on the rebenchmarking following the 2011 Census rather than the more regular revisions.

The difference between population benchmarks projected from the previous Census results and the results of the next Census is known as the intercensal error. Once the latest Census results are available, ERP and labour force population benchmarks are normally revised back five years, to the previous Census, to reflect the actual growth between the two Censuses. As announced in the June 2012 issue of Australian Demographic Statistics (cat. no. 3101.0) intercensal error between the 2006 and 2011 Censuses was larger than normal due to improved methodology introduced with the 2011 Census Post Enumeration Survey which found that more people were actually counted in recent Censuses than would have been suggested by the previous methodology. As a consequence, the ABS has revised ERP and population benchmarks for 20 years rather than the usual five. For more information see Australian Demographic Statistics (cat. no. 3101.0).

From the January 2014 issue of Labour Force, Australia estimates are compiled using population benchmarks based on ERP revised following the 2011 Census. Additionally, for the period July 1991 to December 2013, labour force estimates have been rebenchmarked to the revised population benchmarks. These revisions have been introduced concurrently with the introduction of the Australian Statistical Geography Standard (ASGS). For more information on the introduction of this classification into labour force estimates see Information paper: Regional Labour Force Statistics, 2014 (cat. no. 6262.0).

OTHER IMPROVEMENTS MADE TO THE LABOUR FORCE SERIES

In addition to introducing revised population benchmarks and introducing the ASGS, the following improvements have been made to the labour force series:

- The population benchmark variable, location of usual residence is based on the Greater Capital City Statistical Areas (GCCSA) and Statistical Area Level 4s (SA4) defined in the ASGS.
- Population benchmark classes include finer age groups between 65 and 84 years old.
- Composite estimation is used across the whole series back to July 1991 (previously only used back to April 2001).
- Occupation estimates use the Australian and New Zealand Standard Classification of Occupations, 2013 back to July 1991 (previously only available back to August 1996).
- Regional estimates are presented on a consistent ASGS basis back to October 1998.

- Gross Flows estimates are available back to August 1991 (previously provided back to October 1997).

Changes to the estimation methodology have resulted in changes to the standard error models over the period of revision. These will be updated in the standard error datacube provided in Labour Force Survey Standard Errors, Data Cube, Feb 2014 (cat. no. 6298.0.55.001) concurrently with the release of this publication.

IMPACT ON LABOUR FORCE ESTIMATES

The introduction of the revised population benchmarks and other improvements described above do not involve any change to the unit record data collected in the LFS. Changes to the population benchmarks impact primarily on the level of the labour force estimates (i.e. employed, unemployed and not in the labour force) that are directly related to the underlying size of the population. Changes in population composition such as age, sex or region (as used in the population benchmarks) may result in a different rate of change especially at finer levels of geography. The rebenchmarking has not resulted in any material change to unemployment rates, participation rates or employment to population ratios at the national or state and territory levels.

As the introduction of the revised population benchmarks and other improvements have been introduced at the same time, it is not possible to separately identify impacts on the regional estimates. While, in general terms, rebenchmarking has not resulted in significant change to unemployment rates, participation rates or employment to population ratios the ASGS introduces new regional boundaries. Where the regional boundaries have not changed the rates and ratios will not change significantly. However, in some cases regional boundaries have changed significantly. As the regional estimates have been backcast to October 1998 it is recommended that historical analysis use the ASGS regions rather than comparing the current and previous regions.

In general terms level estimates for Greater Capital City Statistical Areas (GCCSA) under ASGS remain at a relatively similar magnitude to previously although this is due to a combination of the expansion of capital city boundaries under the GCCSA and reduced population benchmarks following the 2011 Census. These factors have generally resulted in level of estimates for the Rest of State decreasing.

MAINTAINING THE LABOUR FORCE POPULATION BENCHMARKS

Initial labour force estimates for the most recent periods will continue to be based on labour force population benchmarks that project forward nine months past the most recent preliminary ERP estimate to the current period and incorporate net overseas migration forecasts provided by the Department of Immigration and Border Protection.

To ensure that labour force series maintain coherence with the latest population estimates into the future, the ABS announced in the November 2012 issue that it will introduce a process of regular rebenchmarking to the revised labour force population benchmarks. From the October 2014 issue the population benchmarks will be revised quarterly (in the January, April, July and October issues) with estimates revised for the previous eight quarters or 24 months. This will ensure that the labour force population benchmarks are updated with the most recent ERP information available.

ANNUAL SEASONAL REANALYSIS

All seasonally adjusted LFS series are analysed annually in more detail than is possible with the monthly releases. This reanalysis examines series for trend breaks, seasonal breaks, and outliers. For 2014 the reanalysis will be conducted on the rebenchmarked series with the results included in the February 2014 issue released in March. One exception is the aggregate hours series, for which the results of the reanalysis are presented in this issue.

FURTHER INFORMATION

For any queries regarding the implementation of any of these changes to the LFS contact Labour Force Estimates on Canberra 02 6252 6525, or via email at labourforce@abs.gov.au.

ATTACHMENT 1 - METHODOLOGY FOR PRODUCING THE REVISED POPULATION BENCHMARKS

The revised labour force estimates were produced by re-weighting unit record data from the LFS to population benchmarks based on ERP revised following the 2011 Census. Consistent with the current methodology, these population benchmarks were broken down into benchmark classes based on location of usual residence, sex and age in order to accurately reflect populations at finer levels. As part of updating the estimates to the current geography standard, the location classes were based the GCCSA and Statistical Area Level 4s (SA4) defined in the ASGS. The benchmark classes were improved by including finer age groups between 65 and 84 years old in order to facilitate demand for more accurate age estimates in this range and preparing for future changes in the retirement age.

Where the sample was too sparse to converge to the nominal benchmark classes, particularly during sample designs in the 1990s and the reduced sample between July 2008 and August 2009, coarser benchmark classes were selected based on combining or "collapsing" age classes until sufficient sample could be weighted to appropriately sized populations. In all cases, Northern Territory was treated as a whole territory for age and sex benchmark classes, with lower level SA4s 'Darwin' and 'Rest of NT' benchmarked to sex only - which is consistent with regional labour force estimation but not comparable to other capital cities.

The preparation of the unit record data for re-weighting provided the opportunity to recast the last 22 year of the series under consistent frameworks and estimation methodology. Composite estimation was used across the whole series back to July 1991 (previously only used back to April 2001). Occupation estimates collected under the First Edition of Australian Standard Classification of Occupations have been converted to the contemporary Australian and New Zealand Standard Classification of Occupations, 2013 back to July 1991 (previously only available back to August 1996). Industry estimates continue to be available under the Australian and New Zealand Standard Industrial Classification, 2013 back to November 1984. The patchwork of regional estimates previously provided under different versions of the Australian Standard Geographical Classification (ASGC) have been replaced by a consistent series back to October 1998 under the ASGS.

Estimates prior to July 1991 have not been revised and continue to be estimated using generalised regression using the existing 1991 Census based populations. The changes made to the labour force series are:

- Estimates between July 1991 and September 1998: estimated using composite

estimation using the 2011 Census based populations at the state/territory, GCCSA, sex and age benchmark classes. Note:

- Jervis Bay Territory is included in ACT estimates up to June 1993, consistent with the sample collection during that time. Jervis Bay Territory populations account for about an extra 1500 people over that period. From July 1993 Jervis Bay Territory is out of scope of the LFS.
 - Sample collected under the Capital City / Balance of State ASGC boundaries during this period were weighted to ASGS GCCSA based population benchmarks. Fine level geographic information was not available for this period to convert the sample populations to ASGS GCCSA boundaries.
 - Two rotation groups per month were rotated into sample between September 1992 and December 1992 during the phase in of the 1991 Census based sample design.
 - The factor previously applied to account for the minor changes to employment and unemployment definitions has not been re-applied because it was not statistically significant.
- Estimates between October 1998 and December 2013: estimated using composite estimation and population benchmarks based on ERP revised following the 2011 Census at the state/territory, GCCSA, sex and age benchmark classes in tandem with an additional benchmark set of SA4 and sex benchmarks. Note:
- May 2000 industry and occupation estimates are not available due to part of the sample lacking industry and occupation coding after being included in a test sample for the changes to the Labour Force Questionnaire in April 2001.
 - A series break remains at April 2001 due to the introduction of definitional changes to unemployment to include all persons who were waiting to start work and were available to start in the reference week.
 - The reduced sample remains during the period July 2008 to August 2009
 - Two rotation groups per month were rotated into sample between May 2013 and August 2013 during the phase in of the 2011 Census based sample design.

Changes to the estimation methodology have resulted in changes to the standard error models over the period of revision. These will be updated in the standard error datacube provided in Labour Force Survey Standard Errors, Data Cube, Feb 2014 (cat. no. 6298.0.55.001) concurrently with the release of this publication.

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